

IV. CONCLUSIONS AND RECOMMENDATIONS

Koko Crater Conclusions:

The Koko Crater project appears to be technologically, environmentally, and economically feasible and could provide a significant source of peaking power for the HECO system on or about the year 2005. Although this project will have significant environmental impacts, reasonable mitigation measures appear to be available for consideration. The following issues will need to be addressed:

1. The residents in the area will need to be assured of the safety of the dam.
2. The breakwater will have a negative visual impact and affect the recreational and commercial use of the area. These impacts will need to be addressed in the detail design. Features should be included to allow fishing and diving from the sea side of the breakwater. Such efforts could actually increase the current recreational use of the area.
3. The Botanical Garden which contains non-native plants will need to be relocated or otherwise compensated. Other mitigating measures may be necessary for loss of certain exceptional trees.
4. The appearance of the reservoir dam will need to be addressed in the design to mitigate any negative visual impacts.
5. There are currently no known endangered species or archeological sites that would be affected; however, a complete archeological survey of the site is required to confirm this.

6. Additional oceanographic, water quality, and marine biological investigations will need to be conducted to minimize impacts to marine resources, especially Hanauma Bay.

7. The effect of water borne sound on marine mammals will need to be evaluated.

8. The routing of the transmission line will need to be developed to determine the extent and impacts of right-of-way acquisition.

Kaau Crater Conclusions

The Kaau Crater project has significant environmental and technical issues that will need to be addressed if this project is to continue to be evaluated. The significance of the issues becomes apparent when it is noted that there are no evident mitigation measures to overcome the following:

1. The Kaau Crater wetlands will be displaced by a fresh water reservoir and will require replacement under current Federal Regulations.

2. The stream flow into the Kawainui Marsh and the Maunawili Ditch will be interrupted during construction and perhaps permanently.

3. The habitat in Maunawili Valley will be adversely affected both during and after construction.

4. The farmers who were recently relocated to the Maunawili agriculture reserve would need to be relocated again.

5. The lower reservoir will inhibit the current flow of springs and seepage

from the marginal dike area resulting in unknown effects on these sources of fresh water.

The above environmental and technical issues associated with the Kaau Crater project makes the feasibility of this project questionable.

In addition to the above issues the following environmental and technical issues will need to be addressed:

1. The 3.5 mile access road to the Kaau Crater will need to be evaluated for its visual impact and affect on biota and habitat.

- 2 The source of water for initial filling of the lower reservoir will require extensive evaluation before the full impact on existing streams, dike impounded water, and habitat can be assessed.

3. While no significant archeological resources were identified, a complete field survey will be required to confirm that none exist.

Recommendations:

The significant technical and environmental issues related to the Kaau Crater project lead to the recommendation that this project be eliminated from further consideration as a PSH facility. The Koko Crater project, however, does not appear to have insurmountable (although formidable) environmental and technical issues to overcome. Therefore, the Koko Crater project is considered feasible within the limits of the scope of this study.

The completion of this report represents a significant step toward the development of Pumped Storage Hydroelectric on Oahu. This report however, still provides only an elementary understanding of the construction, environmental and economic issues related to PSH on Oahu. To improve this understanding, it is recommended that the following

be accomplished:

1. A complete Environmental Assessment should be undertaken to provide a full understanding of the issues with input from governmental agencies and public groups. The material prepared for this report represents a significant step in that direction and the required EA and preparation notice could easily be prepared. The next major step would be an EIS which would address in depth the environmental issues both on shore and off shore.
2. Exploratory geotechnical work should be performed to confirm the selection of sites and construction methods for the reservoir, dam, tunnels and powerhouse.
3. Offshore underwater bathymetric and geotechnical surveys should be performed to confirm the design and construction methods proposed for the seawater inlet and breakwater.
4. Additional studies should be performed to optimize the design to reduce construction cost, improve efficiency, and to evaluate safety of the dam.
5. Continued analysis to define the specific utility system related issues that effect the feasibility of PSH. These issues include system reliability and transmission line routing.